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Industry - Boston

boston's industry

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CITY OF BOSTON
ECONOMIC DEVELOPMENT
AND
INDUSTRIAL COMMISSION
1 CITY HALL SQUARE / BOSTON, MASSACHUSETTS 02201

March 1, 1970

Hon. Kevin H. White
Office of the Mayor
City Hall
Boston, Massachusetts 02201

Dear Mayor White:

Knowing of your keen and ongoing interest in the economic development of Boston, it is my pleasure to transmit herewith boston's industry, a technical report prepared by the staff of the Economic Development and Industrial Commission.

It is based on a series of interviews which were conducted by the EDIC staff with the owners and managers of over 300 Boston manufacturing firms.

The purpose of the Survey and this analysis of the results was to ascertain the concrete employment and tax generating potential of the City of Boston's industrial community. As you have suggested on several occasions, this potential cannot be underestimated. And, while the current profile of Boston's manufacturing may be less than optimal, we believe there is much that can yet be done.

boston's industry is submitted to you at this time in the hope that it will serve as an aid in the development of local policy. It is our hope that such policy will make satisfaction of market conditions and industrial efficiency compatible with the goal of generating employment opportunities for Boston residents and creating additional tax revenues for the City.

Sincerely,

George C. Seybolt
Chairman

boston's industry

BOSTON
PUBLIC
LIBRARY

a profile based on a
survey of manufacturers
conducted by the boston
economic development and
industrial commission

...market facts are not widely available or widely understood ... [and yet they are] the determining factor in an overwhelming majority of decisions being made. The simple act of providing facts regarding market trends in usable form accessible to deciders would make a real difference in our urban development rates.

*William L. C. Wheaton**

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*"Public and Private Agents of Change," in Melvin M. Webber and others, eds., *Exploration into Urban Structure* (Philadelphia: University of Pennsylvania Press, 1964), p. 189.

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foreword

Since World War II, changes in production methods and in transportation technology have caused a nationwide decentralization of manufacturing jobs. In Boston's case, as in the case of most older central cities, this flight of industry to the suburbs has placed pressure on two key economic resources -- jobs and land.

During this same period of time, scores of people in the lower strata of the nation's economic and social ladders have been drawn to the central cities, including Boston, in search of improved opportunities. This phenomenon has added still another dimension to this pressure.

boston's industry is a technical report, which relates the City's workforce to the present pattern of industrial operations. It is based on the discussions with the owners and managers of manufacturing firms which were undertaken as part of the Economic Development and Industrial Commission's (EDIC's) Boston Industrial and Commercial Survey.

Donald N. Stone, Chief Economist for the Boston Economic Development and Industrial Commission, designed the survey and supervised the project. In addition he evaluated the data and authored the report under the supervision of the undersigned.

Every effort was made to insure that the information, both from the survey and secondary sources, presented herein is accurate. To the extent that any opinions are expressed in *boston's industry,* they must be attributed solely to the author and the undersigned. In addition, they bear responsibility for inadvertant errors or omissions in this presentation of the Survey data.

The Office of Technical Assistance of the Economic Development Administration, U. S. Department of Commerce, supported this research with funds granted to the City of Boston under Technical Assistance Grant Project No. 01-6-09164. Both the author and the undersigned would like to acknowledge the assistance of the following members of the Boston Redevelopment Authority staff: John D. Warner, Director, for staff support; Thomas O'Brien, Director of Research, for critical comments upon earlier drafts; and John E. Avault, Research Analyst, for technical assistance. Finally, publication of *boston's industry* would not have been possible without the assistance of the businessmen who participated in the Boston Industrial and Commercial Survey, 1969–1970.

Despite the welter of information published by a number of agencies, the inter-relationships among all of the elements of the City's economy are still not fully understood. Hopefully, the data presented in *boston's industry* will contribute to a better understanding of the Hub City's economy and will provide a useful basis for the development of local policy which, if implemented, will lead to further growth in the economy of the City of Boston.

J. Kinney O'Rourke
Executive Director
Economic Development and Industrial Commission
City of Boston

introduction

Three hundred and nine of Boston's manufacturing firms participated in the Boston Industrial and Commercial Survey Interview.

These firms were categorized by type of industry and by their employment size.

The Standard Industrial Classification Code (called "S.I.C." code) established by the Bureau of the Budget and the Executive Office of the President in 1967 provided the basis for categorizing firms by type of industry. The SIC code fits all economic activities into 99 different major groups. At this general level, the manufacturing sector is comprised of SIC's 19 through 39.

Each industry can be discussed at several levels of detail. For example, the Food and Kindred Products industry at the general level is SIC 20. This is the "2-digit" level. If, however, an analysis of the meat products industry were wanted, the "3-digit" level -- in this case SIC 201 -- would have to be dealt with. Similarly, dairy products is 202 and canned and preserved fruits, vegetables and sea foods is 203. If even more specific information is wanted, the "4-digit" level must be relied upon. For example, meat packing is 2011 and poultry packing is 2013.

The Survey analzyed firms at the 2-digit level.

Another way of organizing firms is by employment size. The Employment Size Classifications of the United States Bureau of Labor Statistics were used in the Survey. The breakdown of size classes by the number of employees within each is:

Size Class	Number of Workers Employed By Firms
1–3	less than 20
4	20 to 49
5	50 to 99
6	100 to 249
7	250 to 499
8	500 to 999
9	1,000 or more

The Survey did not interview size classes 1 through 3. In Boston there are approximately 1,000 firms in size classes 1 and 2 and 400 firms in size class 3. These firms employ a total of approximately 5,000 people. These groups were not interviewed because pre-tests of the Survey indicated that they exhibited extreme fluctuation in employment and even firm location.

The universe for the Survey was derived from the Massachusetts Department of Commerce and Development's *Industrial Directory* and the Greater Boston Chamber of Commerce's *Directory of Manufacturers.* When used together, these sources, both of which were compiled in 1968, reported 745 firms to be located in the City of Boston within SIC's 19 through 39 and having 20 employees or more.

In order to develop a random sequential sample for the Survey, the employment variance by size class was determined. The 1968 employment figures for each firm were used as the basis for this determination. A first sample of 408 was apportioned over size classes 4, 5 and 6. It was intended that the Survey include all 42 of the size class 7, 8, and 9 firms. Later, an additional 108 firms were added to the initial sample of 450, bringing the total sample to 558 of the 745 firms listed in the universe.

During the last four months of 1969 and the first month of 1970, the Economic Development and Industrial Commission's Survey team contacted the 558 firms in the sample. Of those contacted, 77 firms no longer had a Boston address, 48 had less than 20 employees, and 18 were no longer in business. An additional 20 manufacturers were not interviewed because they had only a headquarters office located in Boston. Another 25 firms fell into a category which might be called "single management--multiple firms", meaning that one man was president or owner of several firms in the sample. When this occurred, only one of the firms was included in the Survey.

Of the 370 remaining firms, 61 refused to participate in the Survey or declined to answer some of the questions.

Thus, the Boston Industrial and Commercial Survey, 1969–1970, produced, for the first time, current and detailed information on the character and plans of 309 Boston manufacturing firms (over 50 percent of the revised universe of 582 firms). The Survey had an 83 percent response rate. Responses came from hostile and disinterested firms, as well as from cooperative ones. If the 61 refusals can be correlated with anything, it was assumed to be the degree of competitiveness within an industry. It appeared that the apparel industry was least able to participate for this reason. Nevertheless, 64 of the 164 apparel firms did respond to the Survey.

Twenty-one percent of the final sample of 309 firms is in the apparel industry, 15 percent in printing, 14 percent in food, 8 percent in fabricated metals, and 6 percent in electrical machinery. The other 13 industries each constituted less than five percent of the total of 309.

Thirty-five percent of the sample of 309 was in size class 4, 34 percent was in size class 5, 22 percent was in size class 6, and 6 percent was in size class 7. Size classes 8 and 9 had less than one percent of the total number of firms in the final sample.

Certainly, responses to the questions in the Survey are not absolute evidence of the validity of the information provided by the firm interviewed. However, the interview procedure which was employed for the Survey -- including a personal letter from the Mayor and the Chairman of the Economic Development and Industrial Commission, followed by an appointment for an interview with the employer in his office -- made the information received as accurate as the survey method of data collection permits.

boston's industrial employment

In terms of numbers of workers, manufacturing is the fourth largest sector of Boston's economy, following retail trade, services, and government. As the information in this section indicates, this sector of the City's economy also pays high wages to its workers.

The number of manufacturing jobs in Boston has been declining for the past 25 years as industry has decentralized.

If Boston can stem this decline, what employment benefits would it gain for its residents? This discussion of the employment characteristics of Boston's manufacturing industries outlines the answers to this important question.

manufacturing employment

The Boston Industrial and Commercial Survey, 1969–1970, produced current data on 309 firms with a combined total of 39,600 employees in the 18 manufacturing industries found in Boston. Division of Employment Security figures placed Boston's total manufacturing employment at appproximately 70,000 in 1968. The six largest industries are, according to a breakdown of the number of employees in the Survey sample (to obtain the actual size ranking of industries in the City, it would be necessary to multiply the average size of each firm sampled in each industry by the number of firms within each industry as reflected in the universe):

Industry	Number of Employees in Sample
Printing (SIC 27)	7,100
Food (SIC 20)	6,900
Apparel (SIC 23)	5,000
Chemicals (SIC 28)	4,000
Electrical Machinery (SIC 36)	3,700
Leather (SIC 31)	2,500

The distribution of employees in the sample by size class is shown in Chart 1.

seasonality of employment

The survey reveals that seasonality is confined to a few industries in Boston. Where it does occur, it has a low rate. Less than 25 percent of apparel and of leather have seasonal employment fluctuations. Chemicals, primary metals, metal machinery, electrical machinery, miscellaneous industries, and printing appear to have little or no seasonality. But, this condition may be transient, a reflection of the tight labor force locally as well as nationally. In other words, employers may be reluctant to lay off employees for fear they will not be available for rehire when needed in the future. Nationally, there are indications that the labor market is loosening. However, the precise effect of this trend is uncertain both in terms of increasing layoffs and in terms of seasonality.

quit rates

The quit rate is a subjective evaluation by the employer. The survey question read, "Do you have a high quit rate among your workforce at this location?" If yes, "Has this been an historical problem or a relatively recent development (that is, in the past 2 years)?"

The incidence of a recent and high quit rate by industry is especially noteworthy. Over 40 percent of the food industry has reported a recent and high quit rate. Sixty percent of the leather industry, twenty percent of the apparel industry, and eighteen percent of the printing industry have had the same experience.

A recent and high quit rate may indicate several things:

1. welfare is too competitive with the lower wage levels,
2. wages in one industry are too far below those in other industries in which employment is possible,
3. the employer or the general working conditions of an industry are sufficiently unpleasant so that in times of avid competition for labor an employee will quit, and

4. supplemental wage earners (especially women) will quit when the primary wage earner earns higher wages.

The information now available to EDIC is not sufficient to pinpoint the specific explanations operative in each case. This may be an area of research at a later date.

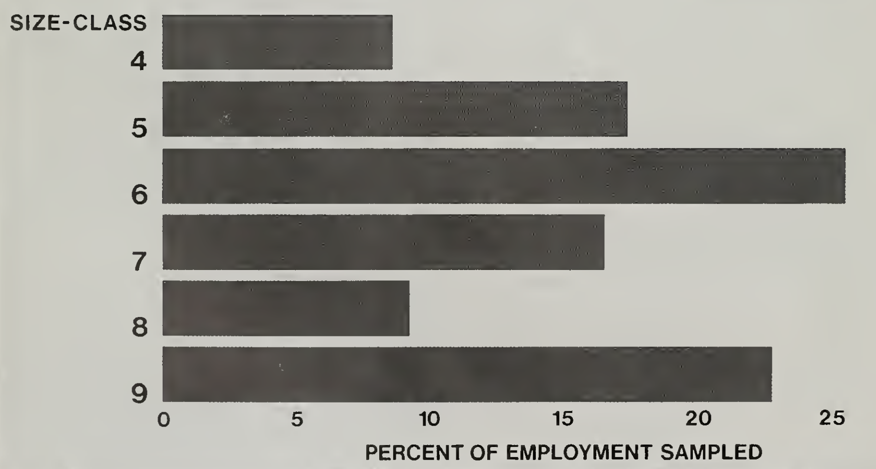
overall composition of workforce

It is noteworthy that "Spanish speaking" (including Puerto Rican, Cuban, and Latin American) constitutes 5 percent of all manufacturing employment. This fact was gleaned from the Survey's question: "What is the composition of your workforce at this location?" The 1960 census reported that there were almost no Spanish-speaking persons living in Boston. Thus, this 5 percent figure denotes a possible shift in the population profile of the City. Negroes accounted for 11 percent of the workforce in manufacturing. Whites and oriental groups constituted the other 84 percent.

minority group employment by industry

In absolute figures, food (SIC 20) is the largest employer of minority-group workers, employing 1,150 of the 6,400 minority-group workers in the sample. "Minority groups" are defined as Negro and Spanish speaking. Second to food is the apparel industry (SIC 23) with about 1,100 minority-group workers. A distant third is electrical machinery (SIC 36) which employs 550.

Chart 1 TOTAL EMPLOYMENT OF FIRMS SAMPLED, PERCENT DISTRIBUTION BY SIZE CLASS



Source: Boston Industrial and Commercial Survey, 1969–1970, Boston Economic Development and Industrial Commission.

Generally, firms that hire the largest percentage of minority workers are among Boston's smallest industries. For example:

Industry	Percent Minority Group Workers
Transportation Equipment (SIC 37)	42%
Primary Metal (SIC 33)	38
Rubber and Plastics (SIC 30)	30
Paper (SIC 26)	28
Wood Products (SIC 24)	27

However, these industries comprise less than 8 percent of sampled manufacturing employment. For the biggest employers, minority participation is a very different story. The following are listed by employment size rank:

Industry	Percent Minority Group Workers
Printing (SIC 27)	6%
Food (SIC 20)	16
Apparel (SIC 23)	22
Chemicals (SIC 28)	15
Electrical Machinery (SIC 36)	15
Leather (SIC 31)	18

These industries employ just under 75 percent of all employees engaged in manufacturing.

The percentage of workers belonging to minority groups is not the only important aspect of minority participation. It does not incorporate wages. Before discussing this, however, quit rates should be related to minority-group participation. Many employers said that their quit rates were related to the nationwide increase in the number of welfare recipients. Others indicated it was directly related to the percentage of minority-group workers in their firm. Because only a "yes" or a "no" response could be given on recent and high quit rates for each firm, the data may be incomplete for those industries where there were only a few firms—these were the industries with a high percentage of minority-group employment.

However, a ranking by industry of the percentage of firms reporting recent and high quit rates breaks down as follows for the largest employers:

Industry	Percentage of Minority-Group Workers	Percentage of Firms with Recent High Quit Rates
Printing	6%	18%
Food	16	28
Apparel	22	13
Chemicals	15	0
Electrical Machinery	15	11
Leather	18	58

This is one indication that a relationship between the percentage of minority-group workers and the percentage of firms reporting recent and high quit rates is tenuous.

male employment

The percentage of male employees is evaluated for two reasons. First, it is important to account for primary wage earners. Second, male participation is positively related to wages.

By size class, the average percentage of males per firm is as follows:

Size Class	Percentage of Male Employees
4	64%
5	62
6	61
7	50
8	66
9	66

But male participation rates are more a function of the kind of industry than they are of the size of the firm.

Sixty percent of all employees covered in the Survey sample are male.

The industries employing the highest percentage of males in their workforces (over 95 percent) represented only a handful of firms. These are textiles; stone, clay, glass, and concrete; and, transportation equipment. Industries with 80 to 90 percent male employment are fabricated metal and metal machinery. Conspicuously absent here is electrical machinery which uses women in bench assembly work. Industries with 70 to 79 percent male employment are: furniture, printing, and primary metals. Industries with 60 to 69 percent male employees are: wood products, paper, chemicals, rubber and plastics, electrical machinery, and miscellaneous. Finally, food has 58 percent, leather has 53 percent, and apparel has only 29 percent male employment.

Any evaluation of male participation must be related to minority group participation and to wages.

The industries with the highest percentages of male and minority group workers are:

Industry	Percent Male	Percent Minority-Group Workers
Transportation Equipment	97%	42%
Primary Metals	77	38
Rubber and Plastics	64	30
Paper	67	28
Wood Products	67	27

While these figures show the industries in which there are the highest incidence of minority-group male jobs, it must be remembered that, as a group these industries represent a small portion of Boston's total manufacturing employment.

By way of contrast, the following chart reflects the male/minority group relationship in the largest industries in the City:

Industry	Percent Male	Percent Minority-Group Workers
Printing	70%	6%
Food	58	16
Apparel	29	22
Chemicals	62	15
Electrical Machinery	62	15
Leather	53	18

Together these industries comprise better than two-thirds of Boston's total manufacturing employment. When male participation is high (printing, chemicals, electrical machinery), the minority-group participation is average or below. Conversely, when male participation is low (food and apparel), minority-group participation is above average. Admittedly, these are crude correlations, but they underscore two points. First, the highest incidence of minority-group male employment is confined to a few of the smallest manufacturing industries. Secondly, minority-group participation in the biggest industries, in addition to being small, consists primarily of females (nonprimary wage earners). And, as Table 2 indicates, these employees are paid relatively low wages.

manufacturing wages

The distribution of wages for all of the employees of the manufacturing firms sampled is:

Wage Distribution*	Percentage of All Employees in All Firms
Below $4,000	3%
$4,000–4,999	18
5,000–6,999	31
7,000–9,999	32
Above $10,000	16

*Wage is defined as gross annual money compensation and includes overtime in some cases.

Ninety-seven percent of those employed in manufacturing in Boston earn more than $4,000. About 80 percent of those in manufacturing earn over $5,000. Those earning between $5,000 and $10,000 constitute the bulk of the blue collar employees in manufacturing.

Unfortunately, it is not possible here to compare the 1969 wage distribution for Boston's manufacturing sector with the wage distribution in 1960. Such a comparison would, of course, provide some indication of the extent of upward mobility in the wage structure. If such a comparison were available, and 1960 wages were lower, it would then be possible to analyze the increases in terms of increased technological improvements and better skills. Furthermore, the impact of inflation on the increase could be determined.

Despite the lack of this comparison, detailed analysis of the Survey data on wages is useful.

The weighted average wage was computed for each firm participating in the Survey as follows: The number of employees in a wage level was multiplied by the midpoint of that level. (The midpoint of the "below $4,000" category was $3,500. The midpoint of the "above $10,000" category was $11,500. This latter category was intentionally skewed downward to decrease the weight of wages paid to executives.) Total payroll for the firms was then divided by the number of employees. The combination of these computations is the weighted average wage for the firm.

The average wage for each "cell" (the point on a table where the vertical column and the horizontal row converge)—the average of all the average wages of the firms in each cell—was then computed. To determine an industrywide average wage, the average wages for each cell in a column were averaged. This method essentially employed a triple average. While it is a rough approach, the low standard deviations in each cell suggest that the industrywide averages are *realistic indications* of wages. The fact that the larger firms in an industry are given a weight equal to smaller firms created the biggest problem. While this error should have been overcome in the design of the data processing program, several points can still be made from the wage information provided by participating firms.

Especially pertinent is the relationship between wage, percentage of male employees, and minority-group participation. Table 2 summarizes these traits by industry.

For the industries that pay wages between $7,500 and $7,900, the percentages of male and minority-group employment are as follows:

Industry	Percentage of Male Workers	Percentage of Minority-Group Workers
Fabricated Metals	87%	13%
Printing	70	6
Metal Machinery	84	12
Chemicals	62	15
Primary Metals	77	38

Primary metals is especially interesting since it has high wages, high male participation (primary wage earners), and high minority participation. Metal machinery and fabricated metals also register high figures in these categories.

The previously mentioned group of industries that employ a relatively high percentage of male and minority-group workers pay these average wages:

Industry	Average Wages
Transportation Equipment	$7,100
Primary Metal	7,500
Rubber and Plastics	6,800
Paper	6,200
Wood Products	7,000

Although this group of industries represents less than 8 percent of the total sampled manufacturing employment in Boston, it has the highest percentage of minority-group employees. If $7,200 is established as a "good wage" (sixty-six percent of all manufacturing employees are in industries in which the average wage is $7,200+), only one of the five industries above has an average wage in excess of this figure. It is primary metals, which represents 3 percent of all manufacturing employees and has a workforce that is 77 percent male and 38 percent minority group.

Among the other industries which are high in minority-group employment, apparel employs mostly females and pays an average wage of only $6,200. Food, chemicals, and electrical machinery, together with the small primary metals industry hire the average or better percentage of minority-group workers. They pay between $7,200 and $7,500 and account for 40 percent of all manufacturing employees in the City.

Printing—covering nearly one-fifth of sampled manufacturing employement—hires only 6 percent minority-group workers and pays an average wage of $7,600.

minority group participation in $5,000+ jobs

Sixteen percent of Boston's total manufacturing employment is from minority groups. Nine percent of the City's manufacturing employees are from minority groups *and* earn $5,000 or better annually. This means that 56 percent of the minority group manufacturing employees earn more than $5,000 per year.

By way of contrast, 80 percent of all manufacturing employees earn in excess of $5,000 annually. No doubt the percentage is even higher for non-minority group manufacturing employees, since the lower wage minority-group figures are included in the total figure.

On an industry by industry basis, the gap between the percentage of minority group employees and the percentage of minority group workers earning more than $5,000 is even more revealing:

Industry	Percentage of Minority-Group Workers	Percentage of Minority-Group Workers Earning $5,000+
Printing	6%	2%
Food	16	11
Apparel	22	10
Chemicals	15	8
Electrical Machinery	15	5
Leather	18	9
Metal Machinery	12	12
Fabricated Metals	13	12
Precision Instruments	25	7
Primary Metals	38	26
Miscellaneous	24	15
Paper	28	20
Furniture	27	8

The five industries (see Table 2) not included above comprise only one percent or less of sampled manufacturing employment.

possible directions for further research

Important questions are raised by the foregoing data. Relative to other minority employment opportunities, how large a resource are manufacturing jobs, particularly those paying more than $5,000 per year? If manufacturing is a relatively large resource and if it is desirable to create more job opportunities of this type, the only areas of "wholesale" impact are in the larger industries and firms.

Based on the data it is also necessary to ask: To what extent should public funds be used to foster small minority businesses? Smaller firms have variable employment and a lower chance of survival than a larger firm, and they represent a "retail" approach to job creation. On the other hand, in firms of 20 or more employees, a third of all minority jobs and a third of the minority jobs paying over $5,000 are in size class 6 alone.

Among manufacturing industries, what are the institutional factors which influence the level of minority participation? How, if at all, do the internal labor markets of firms which employ a significant number of minority-group workers differ, particularly in terms of promotion procedures or the number or entry and exit levels, from firms with a smaller number of minority-group workers? To what extent are these differences a function of 2–digit industrial traits?

What are the skills necessary to obtain a job paying more than $5,000 in Boston, and how is this kind of job usually obtained by minority group workers?

Other questions lead to a discussion of space efficiency and the growth of manufacturing industries (Part II of this report), but they are also relevant to the issue of employment.

For example, which are the growing industries and what are their wage structures and manpower requirements?

How will the growth of employment in an industry be affected by the amount of land space in the central city -- in this case, the City of Boston? To what extent will the moving plans of manufacturing firms alter employment opportunities for those in the core city?

Are there in-city locations as efficient for growing firms as those in the metropolitan area?

summary

In this analysis of the employment data gathered in the Boston Industrial and Commercial Survey Interview, special emphasis has been placed on the participation of minority group workers in the manufacturing sector of the City's economy. This stems from a conviction that increasing the number of high-paying, stable jobs for members of minority groups is a viable target for public action. However, this conviction does not ignore the fundamental fact that industrial operating characteristics have patterns which are discernable within the context of two factors—space and employment.

Therefore, one of the burdens of any public effort to foster economic growth must be to foster a match—a match between the requirement of efficient operation and that of a more equitable distribution of employment opportunities.

boston's industrial space efficiency and growth

There is a close relationship between the employment benefits industry can generate and the availability of land space, space efficiency, and overall business growth trends. Thus, in this section data is presented on how the size of a manufacturing firm is an indication of its space efficiency, how employment patterns have changed in Boston's manufacturing firms since 1959, and what changes in manufacturing employment might be expected as a result of the growth in sales which is anticipated by the firms which participated in the Survey.

space utilization per employee

Some manufacturing industries are more space intensive than others. If a land redevelopment program such as industrial renewal were undertaken, the square footage or even the land footage utilized per employee would be very important, since differences in the intensity of land use would have significant consequence for both land values and total employment benefits per acre. Therefore, it may be worthwhile to note the trend in space utilized per worker as successively larger firms are studied. Generally the amount of square feet per worker is inversely related to firm size. This means that the larger firms utilize their space more efficiently in the sense that more people are employed per unit of space. However, there are instances in which the mean square footage per employee begins to increase after size class 6 or 7. This means that, in these instances, "space efficiency" declines.

In the food industry, the mean square footage per employee ranges from 1,400 in size class 4 to 100 in size class 7. In apparel, the mean square footage per employee is 400 in size class 4 and it drops to 200 in size class 7. It should be remembered, however, that there are differences in the space needs of firms within any 2-digit industrial classification. For example in printing, the smallest firms may be lithographers (SIC 2752) but the biggest are newspaper publishers (SIC 2711).

Comparing different sizes of firms, in all industries size class 7 uses a mean of approximately 200 square feet per employee, while size class 4, the least space efficient group, uses over 700 square feet per employee. In most cases the standard deviation becomes relatively smaller as size class increases. Thus, larger firms show less variability, and they are more consistently space efficient. Comparing different industries, the most efficient user of space—that is the most labor intensive (see Table 3)—is primary metals, though data was gathered for only nine of the twelve primary metal firms in the City. Running close to this leader is apparel with approximately 370 square feet per worker.

Table 3 shows that a group of industries cluster around 400 square feet per employee. Food, which appears to be more space intensive than the rest, uses 650 square feet. The only other large employers, miscellaneous and metal machinery, are relatively space intensive with 690 and 830 square feet respectively.

average percent change in employment since 1959

Although a workable program for tabulating the *absolute* change in employment, has not been established, the *average percent* change gives an approximation of such change. The data covers only those firms that have been in operation simce 1959. Of 186 interviews, 130 firms had a mean increase in employment of 116 percent. For 56 other firms, the mean decline was 33 percent. The fact that the number of firms sampled adds up to only 186 does not indicate that 186 firms were founded since 1959 (only 7 such firms, were interviewed), but that this question was added sometime after the surveying had begun. Nevertheless, the data gives a clear indication of the impact of a decade of national economic growth.

By itself, a relatively slow rate of growth for the 1960's (for example, 58 percent or less) in an industry's employment may only mean that for each unit increase in sales, the increase in employment is small. However, when low rates of growth are accompanied by significant rates of decline in employment, this may signal an overall downturn for the industry. Before any such conclusion can be reached, however, figures for absolute change which are not yet available, should be examined especially among the City's larger industries, such as food and precision instruments, which have shown low growth rates at best (see Table 5).

Printing has grown at a better-than-average rate, but a sizeable number of the printing firms have declined in employment. The strongest advances were made by electrical machinery, chemicals, and rubber/plastics.

Significant variations from the average experience would indicate manufacturing industries which have been relatively high- or low-growth industries. However, any *future* growth or decline cannot be quantified from these statistics. Furthermore, it cannot be assumed that any of the above-mentioned industries will continue to grow at the same rate. All that has been established is how the various industries performed over the major *part* of one ten-year business cycle. That part is the take off, increase, and crest or inflection point depending on whether or not a recession occurs (see Chart 2).

A conclusion can be drawn that those industries which have exhibited relatively moderate growth now employ 57 percent of sampled manufacturing workers. Those that have shown a relatively high growth now employ 20 percent. The relatively low-growth industries account for 23 percent of manufacturing employment.

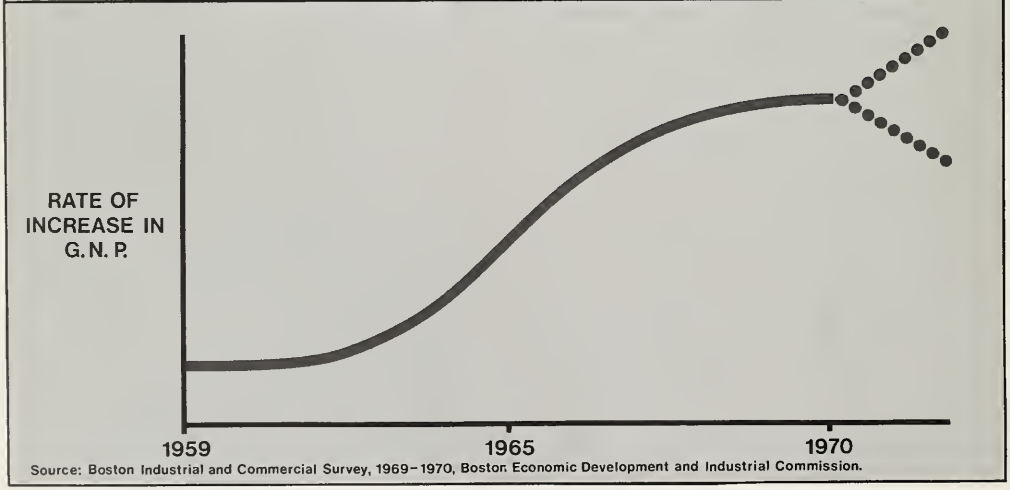
mean percent operating capacity

This is a very rough, often subjective measure. Therefore, only a few significant deviations from the usual need be noted. Transportation equipment and precision instruments reported mean operating capacities below 70 percent. However, this reflects only a few firms in each case. Of the larger industries, only food and apparel had mean operating capacities under 80 percent.

anticipated change in sales

It is difficult to determine exactly what an operating

Chart 2 SCHEMATIC REPRESENTATION OF PRESENT NATIONAL BUSINESS CYCLE



Source: Boston Industrial and Commercial Survey, 1969–1970, Boston Economic Development and Industrial Commission.

capacity below 80 percent presupposes. For example, when asked how their sales would behave for the next two years ("all things being equal") food, which has a low-operating capacity, as well as printing, which does not, expected a clear increase. The answer from fabricated metals, leather, and apparel is not clear, but generally businessmen in each industry see an increase. No one in chemicals sees anything but an increase. Electrical machinery, metal machinery, primary metals, miscellaneous, paper, furniture and fixtures also are clear growth industries in terms of sales. Overall, 190 firms saw an increase in sales, only 22 saw a decrease, 54 saw a leveling of sales, and 41 were unsure. Table 4 gives a complete breakdown by industry. It is important to add that there is no reliable information on the *extent* of decrease or increase in sales anticipated in each industry.

change in employment over the next year

Realizing that the accuracy of corporate manpower planning diminishes quickly after a three-month time horizon, the results of this question have only marginal validity. When asked how employment would change in the next year, 45 percent of the firms said their employment would remain the same, 34 percent saw an increase, 8 percent saw a decrease, 8 percent were unsure, and 5 percent did not answer. By industry, the largest incidence of "increase' answers was in electrical machinery (61 percent of 18 firms), chemicals (57 percent of 8 firms), metal machinery (46 percent of 15 firms), and printing (41 percent of 49 firms). Only a quarter of the 64 apparel firms saw an increase in employment. Half of the 12 paper products firms anticipated an increase. Only in food and apparel do more than 20 percent of the firms anticipate a decrease in employment over the next year.

summary

The caliber of information gathered on growth characteristics does not lend itself to hard and fast predictions for the near future. However, two indicators of growth are summarized in Table 6. Since the direction which the national economy will take at this critical juncture in the business cycle is uncertain, the Survey results cannot be used as reliable indicators of the extent of increases in sales for the next two years. Also, since the Survey did not produce data on how unit increases in sales are translated into unit increases in employment by industry, it would be altogether presumptuous to predict employment changes for the next two to three years.

However, it can be said that there are a few industries which have grown at unusually rapid or slow rates over the expansionary portion of the present business cycle. Food and precision instruments, because they are cyclically insensitive, are most apt to continue to be low-growth industries even if there is an economic downturn. Transportation equipment, on the other hand, *may* become a declining sector. As for the high-growth industries—rubber/plastics, electrical machinery, and chemicals—the national trends are for increases in the long run, and even if there is a recession in the next year or two, none of these is strongly related to the business cycle.

Before turning to the section on industrial linkages, the policy implication related to space-efficiency and growth patterns should be acknowledged. Within each industry, as firm size increases, space efficiency does also. This implies that the locality that contains growing firms is twice blessed because firms that not only seek more employment but more employment per square foot as well. Most central cities have always been proud of the "incubator space" they provide for smaller firms (under 50 employees). However, as the larger, growing firms leave to seek even more space, the central city manufacturing establishments will be predominantly small. This means that relative to what would have been had the large firms remained, central city firms will have a higher rate of failure, will exhibit less stable employment, and will utilize space less efficiently.

boston's industrial linkages

A discussion of Boston's manufacturing industries would not be complete without evaluating industrial linkages. Where do raw and unfinished goods originate? Where are finished goods sold? What modes of transportation are used? And, how do the answers to these questions influence industries in their evaluation of their locations?

origin points of raw materials

Each manufacturer interviewed gave a multiple response with respect to the origin points of his raw materials and unfinished goods. The 309 firms interviewed gave a total of 600 responses, which indicates that, on the average, the number of origin points per firm was small.

For manufacturing as a whole, 40 percent of the major origin points are located outside of New England. As many Boston manufacturers seek Cambridge goods as seek foreign goods. A full third of the origin points are within the United States, but outside of New England, hereafter called "other U.S." About a fifth each are in New England and Boston proper. A final 13 percent are within the Greater Boston Metropolitan Area. Chart 3 summarizes the origin point figures.

However, the question was not designed to answer how much of a firm's raw goods came from any particular geographic location. For example, 80 percent of the major origin points listed were from outside of Boston. This does not mean that 80 percent of raw goods came from outside of Boston. It means that 80 percent of the suppliers are nonlocal.

Individually, some industries have local suppliers, others reach as far as North Carolina and California. Apparel, for example, gets some textiles a few streets away, and the trimming subcontractor may be in the same building. But this industry also depends upon Southern textile producers. Food, on the other hand, has the largest number of origin points in "other U.S.", but has a large number in New England and Boston as well. Printing receives most of it shipments from local sources, but it also receives goods from "other U.S." and New England in that order. The metals group (SIC's 33, 34, 35, 36,) has a wide array of sources, but "other U.S." is the most frequent. The *closest* supplier of furniture and fixtures is the Greater Boston Metropolitan Area with the greatest number of points again in "other U.S."

allocation of employees to market areas by percentage of total sales

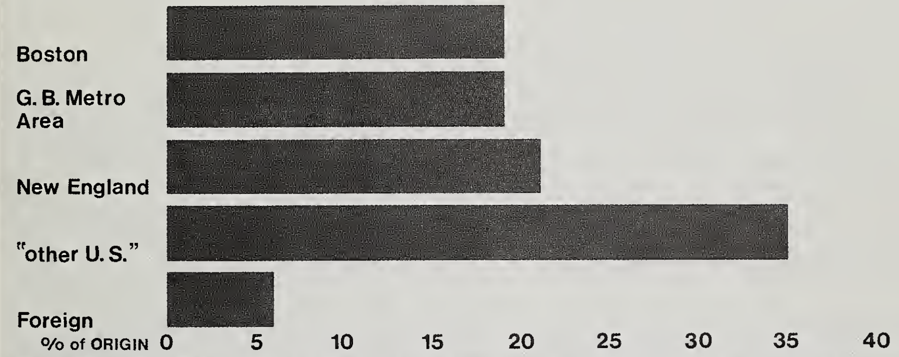
It was impossible in this Survey to get dollar volume of sales by area. Pre-tests of the Survey indicated that such a question would have resulted in a high number of regusals and high percentage of error in the answers. In lieu of this approach, sales were broken down by geographic area on a percentage basis. Employment, insteadof dollars, was then allocated to these areas. In other words, the hypothesis that R percent sales to an area compels an entrepreneur to allocate R percent of his workface to the production of output for that area was adopted. If this approach does not grossly misrepresent reality, the results are surprising.

Overall, 44 percent of "allocated" employment is attributable to the "other U.S." category (a third of the origin points are there). A quarter goes to regional markets (a fifth of the origin points are there).Only 13 percent is allocated to Boston markets (20 percent of orgin points). Approximately the same goes to metropolitan markets as come into Boston in the count of origin points. Finally, only 2 percent of allocated employment goes to foreign or Cambridge areas (6 percent of origin points).

Chart 4 summarizes "allocated" employment.

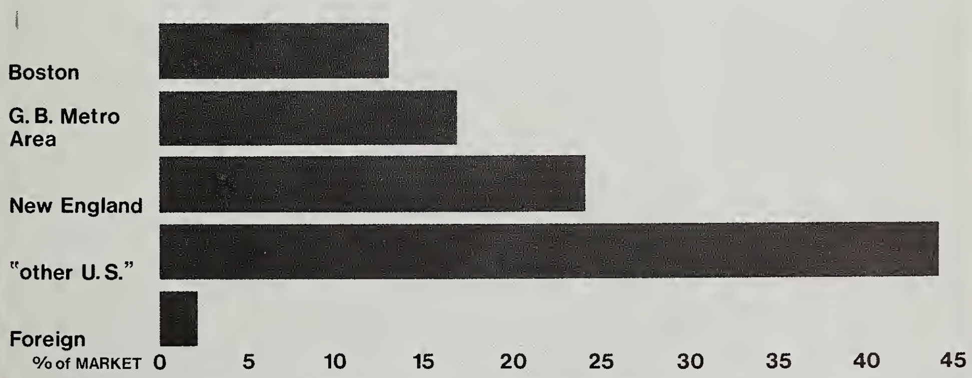
Since these figures on market areas and origin points cannot be strictly interpreted as exports and imports, perhaps the most valid conclusion to be drawn, without placing too heavy a burden on the data, is that the manufacturers of Boston are significantly linked to "other

Chart 3 PERCENT DISTRIBUTION OF MAJOR ORIGIN POINTS FOR RAW MATERIALS



Source: Boston Industrial and Commercial Survey, 1969-1970, Boston Economic Development and Industrial Commission.

Chart 4 PERCENT OF TOTAL SAMPLED EMPLOYMENT ALLOCATED TO MARKET AREAS



Source: Boston Industrial and Commercial Survey, 1969-1970, Boston Economic Development and Industrial Commission.

U.S." both in receiving raw materials and in shipping finished products.

The food industry uses 70 percent of its employment on goods bound for the metropolitan and New England areas. Apparel has 50 percent of its employment work on non-New England output. Wood products sends 60 percent of its goods out of New England. The comparable figure for paper and furniture is approximately 40 percent. Printing uses 30 percent of its employment on Boston jobs and another 30 percent on metropolitan work. Leather, primary metals, fabricated machinery, electrical machinery, transportation equipment, and precision instruments all have heavy employment for "other U.S." markets.

important transportation modes in shipping and receiving

Information on the form of transportation used in shipping and receiving gives some indication as to how the flow of inputs and outputs relates to a firm's location. It also indicates the predominant form of freight transport in the manufacturing sector. This question, like the one concerning origin points, called for a multiple response. The 309 firms listed 640 transport links. The following is the percent distribution of responses:

Transportation Mode	Percent of Responses
Trailer trucks	38%
Small or van trucks	24
REA, UPS, Parcel Post	15
Air cargo	11
Railroad	7
Water transport	3
Other	2

Although a small percentage (probably less than a third) of the "REA, UPS, Parcel Post" category is shipped by rail and air, most of it is sent by truck. This means that truck freight was listed as a major link for about 70 percent of the responses. Again, this does not mean that 70 per cent of freight was shipped by truck.

With the above citywide averages in mind, an examination of the same data by industry is informative. An above-average percent response (37 percent) for trailer trucking came from: food; textile; wood products; furniture; paper; stone, clay, glass, concrete; primary metal; fabricated metal; and metal machinery. Small or van trucks were reported with above-average frequency by apparel, printing, rubber/plastics, fabricated metal, transportation equipment, and miscellaneous. This means that these industries use small panel trucks for frequent, probably intracity, pick up and deliveries. Food, paper, chemicals, and precision instruments relied on rail more than the average for all industry. Chemicals, leather, fabricated machinery, precision instruments, and particularly electrical machinery and transportation equipment mentioned air cargo more than the average. Water transport was most frequently cited by food, textile, furniture, leather, and stone, clay, glass, concrete. It should be added that there were less than 10 responses in both wood products and in stone, clay, glass, concrete.

This general description of the industrial linkages of Boston does not include a breakdown of those firms which consider themselves to be at a transport-cost disadvantage because of their location. However, manufacturing does rely significantly on trailer trucking (about 40 percent of all responses) and on trucking in general (70 percent of responses). Also 80 percent of Boston's major manufacturing suppliers are nonlocal and 40 percent are nonregional. Furthermore, 87 percent of allocated employment is nonlocal with 46 percent nonregional. Among other things, this information suggests that the relationship of Boston to regional highway networks appears crucial to the efficiency of the above linkages.

boston's industrial mobility

The question of where to locate can be the most complex that any firm has to answer. This evaluation assumes that most manufacturing firms attempt to locate where their profits would be the greatest, probably within the relatively short period of a decade. However, economic objectives are not always clear. For example, a firm could want to maximize sales or minimize costs more than it seeks to maximize profits. Non-economic motivations make analysis even more difficult. For instance, entrepreneurs often choose to locate close to their home whether or not that is the most efficient location. Finally, other factors, such as the quality of governmental services, are often assumed to have a bearing on locational decisions.

What are the attitudes of Boston's manufacturing firms with respect to their location? Why did they locate here initially, and what are their plans for the future? These questions are discussed in this section on the mobility of Boston's industry.

average evaluation of city and public services

Employers were asked whether each of eight separate services rated a score of 1.00 (more than adequate), 2.00 (adequate), or 3.00 (less than adequate). The average score for each service was then computed by size class and SIC. Summing over all size classes and SIC's the lowest rated service was parking with a score of 2.46, while the highest rated service was fire protection with a score of 1.82. The ratings given the other services were: water supply 1.96, mass transit 1.96, power 2.00, sanitation 2.15, police protection 2.24, road maintenance 2.31.

However, there may be some question as to the meaningfulness of these scores, especially in and of themselves. What does it mean to say that the water supply is a bit better than adequate? Further, how accurate are these scores? If an employer never had any contact with the police, he might answer that the service is adequate or more than adequate. Perhaps these scores only take on value when they are appraised comparatively and when it is understood they represent the average employer's *perception* of the quality of service levels. Moreover, service levels were found to be insignificant as a reason for firms leaving the City.

year founded or year moved to present location

Of the 309 firms sampled, two thirds *moved* to their present location (possibly from a Boston site); the rest were *founded* at their present location and have not moved since. The latter group raises some interesting questions. In the 1920's, 1940's, and 1950's, there were 17 or 18 firms founded which are still at their original location. Assuming that the probability of staying decreases over time, then these constant figures should understate the number of foundings as one goes back in time. Put differently, this would suggest a recent decline in the number of foundings. The curious fact is that the decline in the 1960's is even more drastic. Only seven firms were founded in the 1960's and have stayed at their initial location. This low number could indicate a number of things. **First**, the fastpaced sixties generated an unusual number of moves. **Second**, the high interest rates since 1966 have severely restricted the number of foundings or, finally, Boston has recently become an undesirable location in which to start a business with 20 or more employees. It should be said that the sixties' figure omits foundings for the last 1¾ years of the decade. However, neither the shorter recorded time period nor higher interest rates since 1966 can account for the sharp drop in the first half of the decade. Thus, hypothesis three must be carefully considered.

The industries that did found operations during the 1960's were apparel (three firms), printing (two firms), and precision instruments (one firm). The first two recorded moderate growth in employment during the decade; the latter had a low growth (the sample included 7 of the 11 already-established firms in this industry). It seems likely that the higher the growth rate for an industry, the greater the probability that new foundings will take place (especially because of federal inducements like the investment tax credit) in that industry. If so, then the fact that the high growth industries—chemicals, electrical machinery, and rubber and plastics—did not have even one founding, indicates again that the third hypothesis may be more explanatory. In short, Boston, since the fifties, has become less desirable as a place in which to open a business.

As for the two-thirds of the sample that has moved to their present Boston location since founding, the frequency of moves is highest in the sixties. Forty-five percent of this group moved to their present site since 1960. Thirty percent came to their present site in the fifties. Only 14 percent remain at a site chosen in the forties, while 10 percent have been at their present location even longer.

A priori, there are several reasons for believing that the frequency of move in any industry would be related to three characteristics: size of firm, ownership status of plant, and employment growth. First, mobility would be related to size because smaller firms would go through more expansive, though irregular, growth periods than larger firms. Also, the cost of moving a smaller firm could be less than moving a larger one. Second, if space were rented instead of owned, the firm could break the lease or wait until it runs out, but in any case not have to worry about finding a buyer. Also, expansion could not be as well accommodated in leased space. A firm would have to look for new, larger quarters. But, if the plant were owned, on-site expansion might be easier. In fact, many firms build more space than they need so they can accommodate expansion at a later date. Therefore, one might assume that firms which own their plants would be less mobile than those who rent. Finally, if a firm's employment expanded significantly, it would have to seek other quarters faster than the firm whose employment stagnated or even declined.

In short, if the above hypothesis is correct, we would assume that the fastest growing industries that rent space and were relatively small would have the highest rate of mobility in the recent decade. Table 7 ranks industry in descending order of mobility.

However, size, tenancy, and growth do not seem to be related to these mobility figures. Twenty-nine percent of the total firms have moved to their present location since 1960. Therefore, in the table 7 listing, any industry above metal machinery has had an above-average mobility rate. One would expect to find all of the high growth industries and none of the lower growth industries in this section. Instead, there are two low-growth and one high-growth industries in the upper portion and three low-growth and two high-growth industries in the lower part. One would expect to find a high percent of leased structures in the upper part; instead they are in the lower section.

Furthermore, firm size should be smaller in the upper half and it is. But it shows *no* consistency. Indeed, by size class the figure is almost constant. Thirty-one percent of size class 4 firms, 30 percent of size class 5 firms, 30 percent of size class 6 firms, 26 percent of size class 7 firms, and none of the larger firms (size classes 8 and 9) have moved since 1960. Overall then, Table 7 cannot shed too much light on why firms move. Perhaps the following hypothesis places too much emphasis on expansion as a reason for moving. Nevertheless, expansion has been the major reason cited for moving.

reasons for moving from previous location for firms that have moved since 1960

For the firms that have moved since 1960, the most frequent reason cited was the need for expansion space (see Table 8). The search for space indicates not just a changing economy but a growing one. The next most frequent response was the catchall, "other" category. Twenty of these "other" responses were for public project displacement; five more were related to tenant-landlord problems; the rest were for scattered reasons. Table 9 indicates that space by far has been the major reason for moving, followed by public project displacement. It is noteworthy that labor, direct cost, and access reasons each were not very significant. Table 7 indicates that growth in employment is ambiguously related to mobility. If a more sensitive measure of growth proves to be better related to mobility, an interesting question arises. If a national economic downturn or stagnation prevails for the next few years, will that reduce the mobility rate and the flight of firms to the suburbs?

previous location of firms that have moved since 1960

Table 10 clearly demonstrates that Boston has relied on itself as a resource for recruitment. With the exception of the eight "other" responses, which indicate that the previous address was unknown, 90 percent of those firms that moved to a Boston location since 1960 came from Boston. The only industry to be attracted to Boston was electrical machinery which accounted for 4 out of the 10 nonlocal firms to move here since 1960.

recent move-outs

Not only has Boston attracted few firms since 1960 and encouraged few firms to start up in the same period of time, it has lost a significant number of firms as well. This is not an unfamiliar story for almost all major central cities. During the past 25 years, transportation technology and new production methods have caused an urban decentralization of manufacturing across the nation. The impact of this shift, in numbers of manufacturing jobs, between 1951 and 1965 is illustrated by the following figures:

City	Decline in Central City Manufacturing Jobs	Increase in Suburban Manufacturing Jobs
Baltimore	19,100	20,000
New York City	182,700	105,900
Philadelphia	89,200	49,900
St. Louis	54,300	46,300
San Francisco	11,700	32,400

Source: County Business Patterns, U.S. Bureau of the Census 1951 & 1965.

While comparable figures are not available for the City of Boston for this period of time, according to the Massachusetts Division of Employment Security, manufacturing employment has declined from 86,200 in 1961 to less than 70,000 in 1969. In fact, manufacturing employment in Boston has decreased an average of over 2 percent annually since 1961.

During the period since the lists of manufacturing firms from which the Survey's universe was drawn -- 1¾ years -- 77 firms have left Boston for other locations. Table 11 indicates that, by industry, the move-outs represented significant losses in wood products, paper, chemicals, rubber-plastics, leather, fabricated metals, metal machinery, electrical machinery, and precision instruments. This group contains three high growth industries, two low growth, and three moderate growth industries. In the case of the high growth industries, this suggests that the City may not be able to accomodate their expansion needs, that is, provide them with the space they need for their operations. In employment terms, these firms represent a loss of between 10,000 and 11,000 jobs.

firms presently thinking of moving

Forty percent, or 122 of the 309 firms interviewed, indicated that they are giving serious thought to moving and 30 percent of total are considering nonlocal sites. This is another indication that over the past decade or two, the decline in manufacturing employment has not occurred because the industry is sick. It has occurred in part, because growing firms in search of vertical space have improved access to significantly vacant outlying areas. The foregoing provides some indication that this trend may be accelerating.

the kinds of locations sought by firms presently thinking of moving

To this multiple response question, there were only 155 responses for the 122 firms, indicating that each entrepreneur had a small number of possibilities in mind. Thirty-five percent of the responses were for industrial parks, 30 percent were for incity mass transit areas, 12 percent were for redeveloped areas, and 23 percent were for some other combination. Importantly though, even though 80 percent of the firms were thinking of leaving Boston, over 40 percent of the responses were for the kinds of facilities *now available* in Boston (incity, mass transit areas and redeveloped areas). This may indicate a disenchantment with city policy more than it indicates a lack of ability on the part of Boston to physically accommodate some firms.

reasons for staying and moving

Unlike the reasons for moving since 1960, these questions asked the respondent to rank his reasons for leaving in order of importance. Therefore, for each reason, we have both the frequency and urgency of the responses. For the latter, a rating of "1.00" indicates that the reason is most compelling or urgent and a rating of "4.00" indicates that the reason is much less compelling or urgent.

First, for the 186 firms which are thinking of staying at their present site, none are staying for very urgent reasons. There was a total 635 responses, roughly 3 per firm, and an urgency rating overall of 2.25. The highest frequency for a given response was 95, and the highest urgency for the same response, 1.91, was for the reason, "large capital outlay required to move." When this group was asked what they would do in the hypothetical situation where they *did* have the money to move, most indicated that they would not move anyway. The second most important reason in frequency and urgency was "satisfied with cost of present space," with a frequency-urgency score of 84—2.05. The third and fourth most important reasons for staying were very close: "have expansion space," with a score of 76—2.18 and "nearness to skilled labor," with a score of 74—2.12. The first reason might be translated roughly into "inertia". Significantly, the space related reasons indicate that firms definitely respond to their needs. If the space is there, firms will stay. Finally, the reference to labor may figure importantly in the future, but this depends on the state of the national economy. Labor was not an important reason for those firms that moved to a Boston location from 1960 to 1968. However, the tight labor markets nationally, *not just locally,* have made this an important factor.

current moving plans

Firm size seems only somewhat related to the propensity to leave Boston. For greater clarity a "mover" is defined as a firm that currently plans to move either within or outside of the city. A "leaver" is a firm that plans to leave Boston. Table 12 shows that as firm size increases, the percent of movers increases. Size classes 8 and 9 seem to have a behavior all their own, and this may be due to the fact that in each there is only a handful of firms and less than a 100 percent sample. Table 13 (again except for size classes 8 and 9) indicates only roughly that leavers are related to firm size. For some reason, a relatively lower percent of size class 6 is reported to be leaving. This may be offset by the fact that the larger the firm, the more seriously it pursues its intentions (Table 14) of leaving. Yet, for any size class, the majority of leavers plans are indefinite.

As for the reasons given by the 95 firms thinking of leaving Boston, both in frequency and urgency, the most important was "lack of expansion space," with a score of 38–1.55. The catchall, "other" category received 27 diverse responses. Some of the more significant ones were: "displacement by public projects," (4–1.0); "poor neighborhood," (3–1.0); "taxes," (4–1.70); "poor parking," (2–1.0); and "poor police protection," (3–1.5). It is interesting that the public project displacement which figured so importantly in moves from 1960 to 1968, appears now as a minor reason for firms wanting to leave the City. Also taxes, the "policy darling" of most industrial commissions, was mentioned by only 4 of the 95 nonlocal movers, and its urgency is closer to a second, not first, order of importance. Table 15 gives a listing of frequency and urgency for some of the more important reasons for leaving. For the Survey's 14 reasons, there were 233 responses from 95 firms (roughly 2 per firm) and the mean urgency rating was 1.96. Four of the five top reasons are space related. As far as the labor related reason is concerned, again this may reflect more a national than local condition.

It is very interesting to note that need for a one-story layout is only the fifth most important reason for wanting to leave Boston. This is one area in which metropolitan locations hold a clear edge over the city, yet local firms thinking of moving have not voiced that strong a preference for a one-story layout. Conspicuously absent from the listing in Table 15 is the reason, "seek better access to unskilled labor." Throughout the Survey, employers consistently complained that, "You can't get unskilled labor nowadays." Yet, not many people seem to be moving because of it.

While we cannot minimize the fact that 95 firms–one third of the sample–are thinking of moving, some of the intentions for leaving the city were undoubtedly cited to shock or threaten City Hall. In addition, some of these firms may be undesirable from the point of view of their employment contribution to the City. Finally, the current state of moving plans seem so pervasively unclear–usually definite sites and/or definite times for moving were unknown–that if City Hall did react with something that was both worthwhile and visible, these 95 firms might change their minds.

However, nothing could be more foolhardy than to assume that all of these firms are bluffing or that City Hall has plenty of time to act. Historically, the employment situation in manufacturing has been deteriorating. Only seven firms were encountered which were founded here during the sixties. Ninety percent of those that moved to a Boston location since 1960 came from Boston. Eighty firms contacted during the Survey, affecting 10,000 jobs, have left the City–and this with a full 15 percent of the universe not even contacted! A third of our sample–95 firms–are presently planning to leave Boston. They employ 11,400 people. They pay $81 million in wages annually. They hire 1,450 minority-group workers earning $5,000 or better–a figure which is close to 40 percent of the total high-paying minority jobs.

* * *

The object of this report has been to point out the employment and locational implications of manufacturing firms in Boston as determined by the Survey. The primary conclusion is that public policy should seriously consider selective retention efforts for firms with high employment benefits. And, so long as the efficiency of a city site is competitive with that of suburban locations, these firms should be induced to stay. What the city needs most right now though is a well-defined non-residential development policy.

appendix a ··· tables

1 number of boston firms interviewed by employment size and by type of industry

2 a composite view of boston's manufacturing by industry

3 mean square feet per manufacturing employee by industry in boston

4 anticipated change in sales over the next two years by industry in boston

5 average percent change in employment by industry in boston, 1959–1969

6 growth characteristics exhibited by manufacturing industries in boston

7 recent mobility as related to size, tenancy, and growth

8 reasons for leaving previous location by firms that have moved to boston since 1960

9 major reasons for leaving previous location by firms that have moved since 1960

10 previous location of firms that have moved to a boston location since 1960

11 the number of firms that have moved out of boston or gone out of business from march, 1968, to december, 1969

12 firms planning to move from boston by size class

13 firms considering leaving boston by size class

14 firms moving that have already chosen a definite site by size class

15 10 most important reasons for leaving given by firms considering only a nonlocal move

Table 1

NUMBER OF BOSTON FIRMS INTERVIEWED

BY EMPLOYMENT SIZE AND BY TYPE OF INDUSTRY

	Food SIC 20	Textile SIC 22	Apparel SIC 23	Wood Products SIC 24	Furniture SIC 25	Paper SIC 26	Printing SIC 27	Chemicals SIC 28	Rubber & Plastics SIC 30	Leather SIC 31	Stone, Clay, Glass & Concrete SIC 32	Primary Metals SIC 33	Fabricated Metals SIC 34	Metal Machinery SIC 35	Electrical Machinery SIC 36	Transport Equipment SIC 37	Precision Equipment SIC 38	Misc. SIC 39	Total
Size– Class 4 (20–49 emp.)	25/12*	2/1	83/24	1/1	15/5	7/4	41/16	9/3	5/3	14/7	3/2	3/3	23/12	13/6	10/4		2/0	11/4	268/107
Size–Class 5 (50–99)	17/10	6/3	44/24		4/3	6/5	34/20	2/2	4/4	1/1	1/1	3/2	14/9	7/3	6/3	4/4	1/1	11/8	165/103
Size–Class 6 (100–249)	13/12		31/13	1/1	3/3	3/2	12/8	2/2	2/1	2/1	2/0	3/2	4/4	8/5	10/6	1/1	7/5	3/3	107/69
Size–Class 7 (250–499)	6/6		7/3			1/1	3/3			2/2		3/2			2/2			1/0	25/19
Size–Class 8 (500–999)	4/1													1/1	3/3		1/1		9/6
Size–Class 9 (1000+)	2/1						4/2	1/1		1/1									8/5
Total	67/42	8/4	165/64	2/2	22/11	17/12	94/49	14/8	11/8	20/12	6/3	12/9	41/25	29/15	31/18	5/5	11/7	26/15	582/309

* Universe/Sample

Source: Boston Industrial and Commercial Survey, 1969–1970, Boston Economic Development and Industrial Commission.

Table 2

A COMPOSITE VIEW OF BOSTON'S MANUFACTURING BY INDUSTRY

INDUSTRY	PERCENTAGE OF TOTAL SAMPLED EMPLOYMENT	PERCENT MALE	PERCENT MINORITY GROUP	AVERAGE OF AVERAGE WAGES ($100's)	PERCENTAGE EMPLOYED THAT ARE BOTH MINORITY GROUP & EARN $5,000+
Printing	18%	70%	6%	76	2%
Food	17	58	16	72	11
Apparel	13	29	22	62	10
Chemicals	10	62	15	75	8
Electrical Machinery	9	62	15	73	5
Leather	6	53	18	62	9
Metal Machinery	5	84	12	76	12
Fabricated Metals	4	87	13	80	12
Precision Instruments	3	49	25	68	7
Primary Metals	3	77	38	75	26
Miscellaneous	3	65	24	71	15
Paper	2	67	28	62	20
Furniture	2	78	27	71	8
Rubber and Plastics	1	62	30	68	10
Transportation Equipment	1	97	42	71	34
Textile	<1	95	23	67	15
Wood Products	<1	67	27	70	11
Stone, Clay, Glass, Concrete	<1	97	1	86	1

Source: Boston Industrial and Commercial Survey, 1969–70, Boston Economic Development and Industrial Commission.

Table 3

MEAN SQUARE FEET PER MANUFACTURING EMPLOYEE BY INDUSTRY IN BOSTON

INDUSTRY	MEAN SQ. FT. PER EMPLOYEE
Primary Metals	250
Precision Instruments	340
Apparel	370
Electrical Machinery	380
Chemicals	380
Rubber—Plastics	400
Leather	400
Printing	410
Fabricated Metal	420
Food	650
Textile	670
Miscellaneous	690
Paper	710
Furniture and Fixtures	820
Metal Machinery	830
Wood Products	1,000
Transport Equipment	1,300
Stone, Clay, Glass, Concrete	1,500
All Industries	520

Source: Boston Industrial and Commercial Survey, 1969—1970, Boston Economic Development and Industrial Commission.

Table 4

ANTICIPATED CHANGE IN SALES OVER THE NEXT TWO YEARS * BY INDUSTRY IN BOSTON

INDUSTRY	NUMBER OF FIRMS SAMPLED	PERCENTAGE OF INDUSTRY'S FIRMS WHICH ANTICIPATE INCREASE IN SALES OVER THE NEXT TWO YEARS	PERCENTAGE OF INDUSTRY'S FIRMS WHICH ANTICIPATE DECREASE IN SALES OVER THE NEXT TWO YEARS
Printing	49	80%	4%
Food	42	71	0
Apparel	64	41	14
Chemicals	8	100	0
Electrical Machinery	18	78	0
Leather	12	33	25
Metal Machinery	15	73	0
Fabricated Metals	25	40	12
Precision Instruments	7	57	14
Primary Metals	9	66	0
Miscellaneous	15	75	7
Paper	12	75	8
Furniture and Fixtures	11	77	0
Rubber—Plastics	8	37	25
Transportation Equipment	5	60	0
Textiles	4	50	0
Wood Products	2	50	0
Stone, Clay, Glass, Concrete	3	33	0
All Industries	309	62%	7%

* Percentage by industry does not add to 100 since "Don't Know" and "stay the same" categories are not included.

Source: Boston Industrial and Commercial Survey, 1969—1970, Boston Economic Development and Industrial Commission.

Table 5

AVERAGE PERCENT CHANGE IN EMPLOYMENT BY INDUSTRY IN BOSTON, 1959–1969

INDUSTRY	RANKED BY ORDER OF EMPLOYMENT SIZE	NO. OF FIRMS	AVERAGE PERCENT INCREASE IN EMPLOYMENT	NO. OF FIRMS	AVERAGE PERCENT DECREASE IN EMPLOYMENT
Printing		19	150%	11	29%
Food	L	17	51	13	40
Apparel		24	81	6	30
Chemicals	H	6	168	1	13
Electrical Machinery	H	11	292	0	0
Leather		5	96	3	27
Metal Machinery		4	135	5	24
Fabricated Metals		9	101	4	23
Precision Instruments	L	2	41	2	50
Primary Metals		6	78	1	66
Miscellaneous		8	130	4	32
Paper		2	68	3	28
Furniture and Fixtures		4	71	1	48
Rubber–Plastics	H	3	262	1	20
Transportation Equipment	L	3	52	1	50
Textile		4	75	0	0
Wood Products	L	2	16	0	0
Stone, Clay, Glass, Concrete	L	1	25	1	66
		Mean of Total Increase	116%	Mean of Total Decrease	33%

M: for a moderate growth rate was omitted for clarity

L: for low growth rate indicates an increase of less than 58 percent

H: for high growth rate indicates an increase of greater than 164 percent

Source: Boston Industrial and Commercial Survey, 1969–1970, Boston Economic Development and Industrial Commission

Table 6

GROWTH CHARACTERISTICS EXHIBITED BY MANUFACTURING INDUSTRIES IN BOSTON

INDUSTRY	AVERAGE PERCENT INCREASE IN EMPLOYMENT SINCE 1959	ANTICIPATED CHANGE IN SALES OVER THE NEXT TWO YEARS... "ALL THINGS BEING EQUAL" (PERCENTAGE OF FIRMS ANTICIPATING AN INCREASE)
Printing	moderate*	80%
Food	low	71
Apparel	moderate	41
Chemicals	high	100
Electrical Machinery	high	78
Leather	moderate	33
Metal Machinery	moderate	73
Fabricated Metals	moderate	40
Precision Instruments	low	57
Primary Metals	moderate	66
Miscellaneous	moderate	75
Paper	moderate	75
Furniture and Fixtures	moderate	77
Rubber—Plastics	high	37
Transportation Equipment	low	60
Textile	moderate	50
Wood Products	low	50
Stone, clay, glass, concrete	low	33
Total	moderate	62%

*A moderate increase means that the percent increase was between ½ and 1½ times the mean increase of 116 percent. This would put the limits of a moderate increase at 58 percent to 164 percent. A high increase is more than 164 percent and a low increase is less than 58 percent.

Source: Boston Industrial and Commercial Survey, 1969–1970, Boston Economic Development and Industrial Commission

Table 7

RECENT MOBILITY AS RELATED TO SIZE, TENANCY, AND GROWTH

INDUSTRY	NUMBER OF FIRMS SAMPLED	PERCENTAGE OF FIRMS SAMPLED THAT HAVE MOVED TO PRESENT SITE SINCE 1960	PERCENTAGE OF BUILDINGS COVERED IN SAMPLE THAT ARE LEASED	MEAN EMPLOYMENT PER FIRM	RELATIVE EMPLOYMENT GROWTH RATE SINCE 1959
Wood Products	2	100%	50%	62	Low*
Textile	4	50	75	56	Moderate
Electrical Machinery	18	44	35	206	High
Transportation Equipment	5	40	0	103	Low
Miscellaneous	15	40	50	74	Moderate
Paper	12	33	30	84	Moderate
Fabricated Metals	25	32	30	61	Moderate
Apparel	64	31	84	78	Moderate
Metal Machinery	15	27	15	127	Moderate
Printing	49	26	82	144	Moderate
Precision Instruments	7	25	100	200	Low
Rubber–Plastics	8	25	40	60	High
Furniture and Fixtures	11	18	57	65	Moderate
Leather	12	17	80	206	Moderate
Food	42	14	31	164	Low
Chemicals	8	12	0	500	High
Primary Metals	9	0	25	143	Moderate
Stone, Clay, Glass, Concrete	3	0	33	34	Low
Total	309	29%	52%	117	Moderate

*A low increase means that the percent increase was less than ½ the average rate for all manufacturing of 116 percent. A moderate increase is defined as a rate of increase between ½ and 1½ times the average. A high increase is greater than 1½ times the average.

Source: Boston Industrial and Commercial Survey, 1969–1970, Boston Economic Development and Industrial Commission

Table 8

REASONS FOR LEAVING PREVIOUS LOCATION BY FIRMS THAT HAVE MOVED TO BOSTON SINCE 1960

REASONS	FREQUENCY OF RESPONSE BY 90 FIRMS
Require expansion space	34
Require one-story layout	10
Consolidation not possible here	5
Cost of space too high	6
High cost of skilled labor	1
High cost of unskilled labor	1
Sought proximity to clients	5
Sought better access to skilled labor	1
Sought better access to unskilled labor	3
Sought better access to competitors	0
Sought better access to raw materials and unfinished goods	1
Sought better access to RR, port, airport, highway distribution point	1
Sought better access to utilities	0
Other*	31
Total	99

*A hand tabulation of the "other" category reveals that 20 responses were for public-project displacement, 5 related to tenant-landlord problems, 2 were due to fires on the premises, 1 response was for parking, 1 for vandalism, 1 for an institutional project, and 1 for difficulties in obtaining a building permit.

Source: Boston Industrial and Commercial Survey, 1969–1970, Boston Economic Development and Industrial Commission

Table 9

MAJOR REASONS FOR LEAVING PREVIOUS LOCATION BY FIRMS THAT HAVE MOVED SINCE 1960

MAJOR REASON	FREQUENCY OF RESPONSE BY 90 FIRMS
Space	55
Labor	6
Access (overlaps with labor)	11
Direct Cost (overlaps with labor and space)	8
Public–Project Displacement	20
Tenant–Landlord Problems	5
Total	105

Note: Low-frequency reasons were omitted for clarity

Source: Boston Industrial and Commercial Survey, 1969–1970, Boston Economic Development and Industrial Commission

Table 10

PREVIOUS LOCATION OF FIRMS THAT HAVE MOVED TO A BOSTON LOCATION SINCE 1960

INDUSTRY	TOTAL	IMMEDIATE AREA	OTHER PART OF BOSTON	CAMBRIDGE	BOSTON METRO. AREA	NEW ENGLAND	UNITED STATES	OTHER*
Food	6	2	4	—	—	—	—	—
Textile	2	—	1	—	1	—	—	—
Apparel	26	13	11	1	—	—	—	1
Wood Products	2	—	2	—	—	—	—	—
Furniture & Fixtures	2	1	1	—	—	—	—	—
Paper	4	1	2	—	—	—	—	1
Printing	13	4	5	—	—	—	1	3
Chemicals	1	—	1	—	—	—	—	—
Rubber–Plastics	2	—	1	1	—	—	—	—
Leather	2	—	2	—	—	—	—	—
Stone, Clay, Glass, Concrete	0	—	—	—	—	—	—	—
Primary Metals	0	—	—	—	—	—	—	—
Fabricated Metals	8	2	4	1	—	—	—	1
Metal Machinery	4	1	2	—	—	—	—	1
Electrical Machinery	8	—	4	3	1	—	—	—
Transportation Equipment	2	—	2	—	—	—	—	—
Precision Instruments	2	—	1	—	—	1	—	—
Miscellaneous	6	—	5	—	—	—	—	1
Total	90	24	48	6	2	1	1	8

* Other means that the interviewee did not know the previous location.

Source: Boston Industrial and Commercial Survey, 1969–1970, Boston Economic Development and Industrial Commission

Table 11

THE NUMBER OF FIRMS THAT HAVE MOVED OUT OF BOSTON OR GONE OUT OF BUSINESS FROM MARCH, 1968, TO DECEMBER, 1969

INDUSTRY	NUMBER OF MOVE-OUTS	NUMBER GONE OUT OF BUSINESS	NUMBER IN UNIVERSE	1968 UNIVERSE *	PERCENT DECLINE FROM 1968 UNIVERSE DUE TO MOVE OUTS ALONE
Food	6	1	67	74	8%
Textile	0		8	8	0
Apparel	17	8	165	190	9
Wood Products	1		2	3	33
Furniture & Fixtures	2		22	24	8
Paper	3		17	20	15
Printing	6	1	95	102	6
Chemicals	5		14	19	27
Rubber—Plastics	2		11	13	15
Leather	7	3	20	30	20
Stone, Clay, Glass, Concrete	1		6	7	14
Primary Metals	0		12	12	0
Fabricated Metals	8	2	41	51	16
Metal Machinery	7	1	29	37	19
Electrical Machinery	6	1	31	38	16
Transportation Equipment	0		5	5	0
Precision Instruments	2		11	13	15
Miscellaneous	4	1	26	31	13
Total	77	18	582	677	11%

---

*This column does not reflect the 48 firms found during the survey to have less than 20 employees nor does it include the 20 firms which were found to have non-manufacturing operations.

Source: Boston Industrial and Commercial Survey, 1969—1970, Economic Development and Industrial Commission

Table 12

FIRMS PLANNING TO MOVE FROM BOSTON BY SIZE–CLASS

SIZE–CLASS	FIRMS CONSIDERING MOVING	TOTAL FIRMS IN SAMPLE	PERCENTAGE OF SAMPLE THAT IS CONSIDERING MOVING
4	39	106	37%
5	39	102	38
6	30	69	43
7	11	19	58
8	2	6	33
9	1	5	20

Source: Boston Industrial and Commercial Survey, 1969–1970, Boston Economic Development and Industrial Commission

TABLE 13

FIRMS CONSIDERING LEAVING BOSTON BY SIZE–CLASS

SIZE–CLASS	FIRMS CONSIDERING LEAVING BOSTON	TOTAL NUMBER OF FIRMS PLANNING ON MOVING	PERCENTAGE OF MOVING FIRMS THAT ARE CONSIDERING LEAVING BOSTON
4	29	39	74%
5	34	39	87
6	21	30	70
7	9	11	88
8	1	2	50
9	1	1	100

Source: Boston Industrial and Commercial Survey, 1969–1970, Boston Economic Development and Industrial Commission

TABLE 14

FIRMS MOVING THAT HAVE ALREADY CHOSEN A DEFINITE SITE BY SIZE–CLASS

SIZE–CLASS	FIRMS THAT HAVE ALREADY CHOSEN A DEFINITE SITE	TOTAL FIRMS CONSIDERING LEAVING	PERCENTAGE OF FIRMS MOVING THAT HAVE ALREADY CHOSEN A DEFINITE SITE
4	2	39	5%
5	6	39	15
6	5	30	17
7	3	11	27
8	0	2	0
9	1	1	100

Source: Boston Industrial and Commercial Survey, 1969–1970, Boston Economic Development and Industrial Commission

TABLE 15

10 MOST IMPORTANT REASONS FOR LEAVING GIVEN BY FIRMS CONSIDERING ONLY A NONLOCAL MOVE

REASONS	FREQUENCY OF RESPONSE	URGENCY OF RESPONSE*
1. Require expansion space	38	1.55
2. Cost of space too high	27	1.74
3. Consolidation not possible here	21	1.80
4. Seek better proximity to skilled labor	25	1.96
5. Require one-story layout	22	2.22
6. Seek better proximity to unskilled labor	21	2.47
7. Cost of skilled labor too high	14	2.00
8. Cost of unskilled labor too high	16	2.43
9. Seek better proximity to raw materials and unfinished goods	8	2.62
10. Seek better proximity to special transportation facilities such as railroad siding, water frontage, highway distribution point, airport, etc.	7	2.57

*The Urgency rating is a scale from 1.00 to 4.00. The lower the rating, the more urgent the reason.

Source: Boston Industrial and Commercial Survey, 1969–1970, Boston Economic Development and Industrial Commission

appendix b ··· survey questionnaire

CITY OF BOSTON

ECONOMIC DEVELOPMENT AND INDUSTRIAL COMMISSION
OFFICE OF THE MAYOR
Room 816 CITY HALL, BOSTON 722-4100

CONFIDENTIAL

BOSTON INDUSTRIAL AND COMMERCIAL SURVEY
INTERVIEW, 1969

Serial No.__________ Sub-zone__________ Block__________

Briefly, have you felt that there are one or two things that could be done to improve the overall business climate here in Boston?

____

A. INTRODUCTION

A1. Name of interviewer______________________
Title of Interviewee______________________

A2. Products made or services performed at this location______

____

A3. Was the firm always at this location? YES–1
NO–2

A4. If No, what was the previous location

Immediate Area	1	New England	5
Other part of Boston	2	Middle Atlantic States	6
Cambridge	3	Other U. S.	7
Metro Area	4	Abroad	8
__________ (specify address)		Don't Know	9

A5. When did the firm come to this location?__________

____

A6. If moved since 1960, did you personally make the decision to move here or were you responsible for making the recommendation to move? YES–1
NO–2

A7. If moved since 1960, what are several important reasons for moving from your previous location:

Space	(Required expansion space	1
	(Required 1-story layout	1
	(Consolidation not possible there	1
	(Cost of space was too high	1
Labor	(Cost of skilled labor too high	1
	(Cost of unskilled labor too high	1
	(Sought better proximity or access to:	
	–customers	1
	–skilled labor	1
	–unskilled labor	1
	–competitors	1
	–raw materials & unfinished goods	1
	–special facilities such as:	
	railroad siding, water frontage, highway	1
	distribution point, airport, etc.	1
	–utilities such as:	
	power, water & machine repair services	1
	(Other______________________	

GO TO E1. PAGE 8. THEN RETURN TO B1.

B. EMPLOYMENT

B1. Does the number of fulltime employees at this location vary depending upon time or season of year, in other words, is employment seasonal? YES–1
NO 2

B2. If Yes, what is average employment figure by (calendar) quarter?

(Jan–Mar)	1 ____	(July–Sept.)	3 ____
(April–June)	2 ____	(Oct.–Dec.)	4 ____

Any comments upon changes within a quarter__________

____

B3. If No, ask, On the average how many people work fulltime at this location during a business week including all hourly and salaried personnel and yourself?

How many people work part-time during an average business week?__________________

The following employment questions refer to the full-time labor force:

B4. What was the size of your work force ten years ago (1959)______________________

How many employees did you have in 1965?__________

B5. All things being equal, do you expect the employment to remain the same, increase, or decrease in the next year?

the same–1 decrease–3
increase–2 idealizing, guess or don't know–4

Does the employment at this location vary with the general business cycle of the nation? (i.e. is employment cyclical?)

yes–1 no–2 uncertain–3

Do you have a high quit rate among your work force at this location? YES–1
NO–2

If yes, had this been an historical problem, or is it a relatively recent development? (within the past two years)?

Historical–1 Recent–2

B6. What is the composition of your workforce at this location?

	Percent	or Number
Spanish speaking (including Puerto Rican, Cuban and Latin American)	______ ______	______ ______
White	______	______
Negro	______	______

B7. How many employees are male? ______ ______

B8. How many persons working here are in the following wage or salary categories?

Annual	Weekly	Percent	Number
Below $4,000	Below $77	_____	_____
$4,000–4,999	$77–96	_____	_____
$5,000–6,999	$97–134	_____	_____
$7,000–9,999	135–192	_____	_____
$10,000 and over	193–288	_____	_____

B9. How many Negro and Spanish speaking employees earn $5,000 annually (97 per week) or more?___% or ___(No.)

C. PLANT CHARACTERISTICS AND SPACE ALLOCATIONS

C1. How many buildings or parts of buildings do you occupy for this operation?

1 2 3 4 5 6 7

Their location _____ _____ _____ _____

C2. What type of construction was used here? (main functional area)

Concrete or Brick (hi-rise, wood flr., vert windows)	1
Cinder block (1–2 stories)	2
Wood Frame	3
Steel Frame loft (hi-rise, horizontal windows)	4
Other	5

C3. Is there a sprinkler system here? (main functional area)

YES–1 NO–2

C4. The ceiling height of the main functional area is closest to:

10 feet–1 15 feet–2 18 feet & over–3

C5. How many floors in main building? _____

How many floors or parts of floors are occupied by this firm in main building? _____

C6. a. Are there any vacancies in this or nearby buildings that you know of?

YES–1 NO–2

b. If yes, Would you be willing to rent out the vacant space to others?

YES–1 NO–2 not mine to rent–3

C7. If Yes, how much floor space (00's sq. ft)? _____

C8. What is the total floor area at this location? (00's sq. ft.).

_____

C9. Excluding office and warehouse space what % (or number) of the above is devoted solely to factory space (00's sq. ft.).

_____Percent or Number _____

C10. Which of the building(s) or parts of buildings at this location do you own or lease?

a. If owned, In what year was it purchased?
b. If leased, In what year did the lease begin & expire? _____ _____

What is the annual rent in $/sq. ft.?
Is there a tax escalation clause in the lease? _____
(interviewer note: If tenant at will (i.e. no present lease) fill in 0000)

Bldg. No.	OWN	RENT	LEASE	BACK	YEAR PURCHASED	LEASE BEGAN	LEASE EXPIRES	Tax Escalation Clause (1–yes, 2–no)	$/Sq. Ft.
1	1	2	3		_____	_____	_____	_____	_____
2	1	2	3		_____	_____	_____	_____	_____
3	1	2	3		_____	_____	_____	_____	_____
4	1	2	3		_____	_____	_____	_____	_____
5	1	2	3		_____	_____	_____	_____	_____
6	1	2	3		_____	_____	_____	_____	_____
7+	1	2	3		_____	_____	_____	_____	_____

D. LINKAGES AND GROWTH TRENDS

D1. What are the origin points of the major deliveries to this plant?

Immediate Neighborhood	1	New England	1
Other Boston	1	Rest of U. S.	1
Cambridge	1	Foreign	1
Metro Area	1		

D2. Do you have significant problems making or receiving deliveries at this location?

YES–1 NO–2
(specify) _____

D3. In shipping and receiving what modes of transport are important for you

REA, UPS & Parcel post	1	Aircargo	1
Trailer trucking	1	Water Transport	1
Small or van trucks	1	Other	1
Railroad	1		

D4. Does your present location keep you from using a more economical mode of transportation?

YES–1 NO–2 DK–3
(specify) _____

D5. Are there significant problems in transporting a sufficient workforce to this location?

YES–1 NO–2

D6. If Yes, what?

No mass transit nearby–	1
Insufficient parking space–	1
Other–	1

D7. Would a different location present opportunities for better labor relations?

YES–1 NO–2 DK–3 If Yes, specify _____

D8. What are the market areas for your products (services) by percent of total sales in:

Immediate neighborhood	_____	New England	_____
Other Boston	_____	Rest of U. S.	_____
Cambridge	_____	Foreign	_____
Metropolitan Area	_____		

D9. Currently, what percent of operating capacity is this plant running at? ____________________

What % was it running at in 1965 ________ in 1967 ______?

D10. Since 1965 have your sales increased, decreased or remained the same?

increase—1, decrease—2, the same—3, by ______ percent

D11. All things being equal, do you expect sales to remain the same, increase or decrease in the next 2 years?

the same—1	decrease—3
increase—2	idealizing, guess, or DK—4, by _____ percent

E. CITY ENVIRONMENT

E1. How do you rate the following city and other public services in this area:

	More Than Adequate	Adequate	Less Than Adequate
Water Supply	1	2	3
Police Protection	1	2	3
Fire Protection	1	2	3
Road Maintenance	1	2	3
Parking	1	2	3
Sanitation	1	2	3
Power	1	2	3
Mass. Transit	1	2	3

Comments ____________________

F. OVERALL EVALUATION OF LOCATION

F1. Date of this interview (Month) ____________

F2. How much (if any) thought have you given to moving or to opening up an additional plant in another location in the next three years?

move plant—1	significant thought—1
add plant—2	only passing thought—2
	little or no thought—3

(if little or no thought, skip to F17)
(if significant & add plant skip to F4)

F3. If significant & move plant, ask, Were you thinking in terms of all or part of the operation here?

All—1 Part—2 Uncertain—3

F4. Do you have definite plans to move (add new plant)?

YES—1
NO—2

F5. Which of the following types of locations have you considered: (or will you consider)

In-city Mass Transit area	1	New Industrial Park	1
Redeveloped site	1	Other	1

F6. Where might you move (place new plant)

Elsewhere in Boston	1	New England	1
Cambridge	1	Mid-Atlantic	1
Metropolitan Area	1	Other	1

F7. What are your reasons in order of importance for leaving? (for not expanding at this location) (interviewer must not prompt)

			ORDER OF IMPORTANCE			
	1	(Require expansion space	1	2	3	4
	2	(Require 1-story layout	1	2	3	4
Space	3	(Consolidation not possible here	1	2	3	4
	4	(Cost of present space too high	1	2	3	4
	5	(Cost of skilled labor too high	1	2	3	4
Labor	6	(cost of unskilled labor too high	1	2	3	4
	7	(Seek better proximity to: —competitors	1	2	3	4
	8	—skilled labor	1	2	3	4
	9	—unskilled labor	1	2	3	4
	10	—customers & market	1	2	3	4
	11	—raw materials & unfinished goods	1	2	3	4
	12	—special transportation facilities such as: railroad siding, water frontage highway distribution point, airport, etc.	1	2	3	4
	13	—utilities such as: water, power and machine repair services, etc.	1	2	3	4
	14	Other	1	2	3	4

Comments ____________________

F8. How many people will you continue to employ here at this plant? ____________________

F9. How many are you planning to employ at the new location? ____________________

F10. When do you expect to move? (open new plant) what year ____________________

F11. Have you chosen a definite site?

YES—1
NO—2

(If Yes, go to F—26) (If No, ask:)

F12. How much floor space do you require? ____________ (in 00's sq. ft.)

F13. In what type of building?

Loft	1	Factory	4
1-story	2	Other	5
2-story	3		

F14. If one-story ask: Could you use a properly engineered multi-story structure?

YES—1 NO—2 MAYBE—3

F15. Do you prefer to rent or own?

RENT—1
OWN—2

F16. If own, how much land do you require? ____________ (00's sq. ft.)

If rent, how much are you willing to pay per square foot? ______ Now skip to F26.

F17. (If not moving) what are your reasons in order of importance for staying at your present location. (interviewer must not prompt).

			ORDER OF IMPORTANCE			
	1	(Have expansion space	1	2	3	4
	2	(Have 1-story layout	1	2	3	4
Space	3	(Consolidation possible here	1	2	3	4
	4	(Particularly satisfied with cost of present space	1	2	3	4

(continued on next page)

(continued from preceding page)

	*5	(Large capital outlay required to move	1	2	3	4
	6	(Cost of skilled labor satisfactory	1	2	3	4
Labor	7	(Cost of unskilled labor satisfactory	1	2	3	4
		(Have good proximity or access to:				
	8	—competitors	1	2	3	4
	9	—skilled labor	1	2	3	4
	10	—unskilled labor	1	2	3	4
	11	—customers & market	1	2	3	4
	12	—raw materials & unfinished goods	1	2	3	4
	13	—special transportation facilities such as: railroad siding, water frontage, distribution point, airport, etc.	1	2	3	4
Access	14	—utilities such as: power, water, machine repair services, etc.	1	2	3	4
	15	—Other	1	2	3	4
		Comments ____				

F18. If *5 is an important reason for staying and if with sufficient capital you would move, what would be the main reason for moving? ____

F19. Do you intend to expand here? ____

Yes, in any event—1 No—2 Uncertain—3

(If No, go to F26)
(If Yes, or uncertain, ask:)

F20. How do you intend to expand at this location

Rent available space	1
Buy new building	1
Build addition to present bldg	1
Construct new building	1
Other	1

F21. Would this expansion have any affect on the number of your employees?

increase—1 decrease—2 the same—3

by ____ percent

F22. How much floor space (00's sq. ft.) do you intend to add?

____

F23. How much additional land space do you intend to add?

____

F24. Do you anticipate difficulties in assembling land?

YES—1 NO—2 DK—3

F25. If yes, what difficulties

Zoning	1	Multiple Ownership	3
Others won't sell at reasonable prices	2	Other ____	4

F26. To what extent have your current operations and/or expansion plans been hampered because of difficulties in obtaining financing?

severely	1	slightly	4
significantly	2	not at all	5
moderately	3		

F27. If more than moderately, specify reason why (e.g. lack of equity) ____

F28. What percent of your total sales are directly related to the United States' defense effort, including Viet Nam? ____

F29. What type of fuel does your firm utilize for the major part of its operations?

gas	1	electric power	3
fuel oil (grade) ____	2	coal (type) ____	4

F30. Has the present local and/or state tax structure had a significant effect on your firm's operations at this location?

YES—1 NO—2

If Yes, which components of the local and/or state tax structure is most troublesome for the firm—[list in order of importance?]
(city real estate tax; city sales tax, city personal property tax, state income tax, state corporate excise tax, etc.)

1) ____ 3) ____

2) ____ 4) ____

Specifically how has this tax situation affected your firm's current operations?

F31. If firm is thinking of moving, expanding or adding a new plant out of the city, then ask to what extent has the present city tax structure influenced their choice of location?

significantly—1 moderately—2 little or not at all—3
Comments: ____

If firm is moving out of state, to what extent has state tax structure influenced its choice of location?

significantly—1 moderately—2 little or not at all—3
Comments: ____

Interviewer's Subjective Analysis

Date of Interview: ______________ Time: __________________

Name of Firm:	Address:	Name of person interviewed:
______________	______________	______________

1. Name of Interviewer:

D. Stone	1	C. Hovland	6
P. Menconeri	2	J. McMahon	7
P. Crowe	3	W. A. Reilly	8
H. Collings	4	T. Phipps	9
K. West	5	R. Bishop	10

2. Title of Interviewee:

Chairman of the Board	1	Division Manager	6
Executive Director	2	Vice President	7
		Partner	8
President or Chairman of Corporation	3	Sales Manager	9
Treasurer or Comptroller	4	Other	0
Branch or plant manager	5		

3. Nature of Interviewee's Response

a)	cooperative	1	b)	tried to be accurate	1
	uncooperative	2		generalized frequently	2
	neither	3		may have falsified answers	3

4. Regardless what the interviewee formally indicated about staying, moving or adding new plant what, if anything, did his formal conversation indicate that he would probably do?

Stay	1	Expand on site	6
Move within Boston	2	He is very uncertain of his plans	7
Add plant within Boston	3		
Move out of Boston	4	Interviewer is uncertain of his plans	8
Add plant out of Boston	5		

5. If you think he will move, expand or add out of city, what do you think is the likelihood that the firm would remain in the city with aid

less than even chance that aid would help	1	better than even chance that aid would help	3
even chance that aid could help	2		

6. Nature of Neighborhood

a)

primarily industrial	1	some buildings which seem all or mostly vacant	1
relatively small amount of industry	1	deteriorating structures	1
some commercial	1	sound structures	1
some residential	1		
some vacant land	1		

b) The neighborhood building height is predominantly

mixed	1	2–5 story	3
1–2 story	2	6+ stories	4

c) Area traffic is predominately

heavy	1	mostly trucks	1
medium	2	mostly cars	2
light	3	both	3

7. What was the interviewee's general attitude on City government:

a) Felt that the City Administration was greatly concerned with business community's problems and was making a sincere effort to improve the City's business environment. 1

b) Felt that the City Administration was moderately concerned with business community's problems and was making an effort to improve the City's business environment. 2

c) Felt that the City government was concerned, but has made no significant attempt to improve the situation. 3

d) Felt that the City government was not really concerned with the business community's problems and has made little attempt to improve the City's business climate. 4

Other specific comments: ______________________________

8. Briefly comment on specific problems that the firm is having with City agencies, (i.e., police; zoning; tax assessing; trash collection; fire, etc., ______________________________

9. ADDITIONAL COMMENTS: (Not sufficiently covered elsewhere concerning firm's growth potential, labor force, linkages, corporate structure, and overall evaluation of present location.

____

____

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Boston's Industry.
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Leggat, McCall & Werner, Inc.

Matthew McGrath, Esq.

Thomas E. Rivers, Jr.
Massachusetts Business
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